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UNCLAS SECTION 01 OF 03 STATE 088010

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SENSITIVE

E.O. 12958: N/A

TAGS: [PARM](#) [PREL](#)

SUBJECT: AUSTRALIA GROUP: ESTABLISHING MINIMUM SURFACE
COATING THICKNESS FOR LINED CHEMICAL EQUIPMENT (#4 OF 4)

11. (U) This is an action request. Please see paragraph 2.

ACTION REQUEST

12. (SBU) Drawing on the background below, Department requests AG country Embassies provide the non-paper in paragraph 6 to appropriate host government officials and elicit a response. (Note: This is the last of four cables conveying U.S. proposals. End Note) In delivering this non-paper, posts should indicate that the U.S. is sharing this non-paper as part of preparations for the September 21-25 AG plenary and that we would appreciate hearing their views or any suggestions they may have on the non-paper. Also, request Embassy Canberra provide the non-paper to the AG chair for circulation as an official AG document.

REPORTING DEADLINE

13. (U) Embassy should report results of this demarche by cable before September 7. Please contact ISN/CB Andrew Souza at 202-647-4838 or via e-mail for further information.

BACKGROUND

14. (SBU) The manufacturing process for many chemical warfare agents can be extremely caustic, requiring equipment that is made of specialized corrosion and heat-resistant materials. To help limit the proliferation of chemical weapons, the 40-country Australia Group (AG) has agreed to require government permission for exports of this specialized chemical production equipment. For this year's AG plenary session, the United States will present three proposals to refine this control list for dual-use chemical equipment. One proposal is to address the increasing use of wear coatings to protect controlled chemical production equipment during shipping (the other three proposals will be sent septel).

15. (SBU) U.S. chemical equipment manufacturers sometimes apply a thin layer of scratch-resistant material to the interior surfaces of their products to keep them clean or protect them from damage during shipping, often referred to as a 'wear coating.' Some of these coatings are made from the same corrosion-resistant fluoropolymers used to line the specialized chemical production equipment controlled by the AG. This can make it difficult to determine whether or not the equipment can be used to produce chemical warfare agents.

Since fluoropolymer coatings less than a few millimeters tend to have too many surface defects to reliably produce chemical warfare agents, the U.S. believes the AG should adopt a technical note that excludes equipment with fluoropolymer coatings less than 2.5mm thick from the Group's current controls for dual-use chemical equipment. We also believe the technical note should also indicate that the AG controls extend to corrosion-resistant chemical production equipment that is shipped with a wear coating made of material that is not corrosion-resistant.

NON-PAPER

16. (SBU) Begin text of non-paper:

AG-In-Confidence

AUSTRALIA GROUP

Australia Group Doc
AG/Jul09/CL/USA/xx

Minimum Surface Coating Thickness for Controlled Chemical Equipment

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Issue

Should the Australia Group (AG) specify a minimum surface thickness of listed coating materials on the Control List for Dual-Use Chemical Manufacturing Facilities and Equipment and Related Technology and Software?

Background

At the April 2008 AG Plenary, the United States tables a non-paper on clarifications to controls for dual-use chemical equipment. One of the concerns discussed in the paper was very thin coatings of controlled materials of construction. We posed the question, "Is there any minimum thickness required in order for a surface to be considered in contact with the chemical(s) being processed?"

For example, some U.S. manufacturers produce chemical equipment with with very thin layers of controlled materials, primarily fluoropolymers, on top of non-controlled materials. In many instances, the coating is intended to be protective coating for shipping purposes. Other manufacturers produce chemical with an additional thin layer of abrasion-resistant coating made of non-controlled materials on top of controlled materials.

Based on our discussions with AG members during the plenary, the United States would to present additional information on this issue and recommend the AG consider revising the control list for dual-use chemical equipment.

Discussion

Organic coatings, such as fluoropolymers, are frequently used as linings in controlled dual-use chemical equipment as an effective and economic means of controlling corrosion. The presence of a controlled surface layer may not necessarily make the equipment appropriate for handling the chemical weapons precursors identified on the Control List for Chemical Weapons Precursors. The coating may be present just for sanitation reasons (e.g. in the preparation of food or beverages) or for protection during shipping.

At a minimum, organic surface coatings of more than 0.75mm (0.03 inch) are needed to prevent immediate and rapid attack of the underlying substrate metal. Furthermore, thin coatings, even with thicknesses of greater than 0.75mm, may

contain defects, be damaged in service or may be selectively permeable to some liquids, all of which can lead to corrosion of the substrate metal and resultant failure in service of the equipment, even though the coating material is still resistant. Therefore, reliable organic coatings for corrosive service (fluoropolymers) should have a thickness greater than 2.5mm (0.1 inch) (For more information, see Perry's Chemical Engineer's Handbook, 7th Edition, by H.R. Perry and D.W. Green).

A different, but related problem is when an over-coating of abrasion-resistant material is placed on top of a controlled material. This can lead to similar classification difficulties. Therefore, we recommend adopting a minimum surface coating thickness of greater than 2.5mm for all non-controlled materials placed on top of controlled materials. Thin surface coatings of non-controlled materials with thicknesses of 2.5mm (0.10 inch) or less present on top of controlled materials should not be considered when classifying chemical manufacturing equipment.

In the absences of a minimum surface thickness criterion, minimal surface coatings that provide little or no corrosion protection can make classifying chemical manufacturing equipment difficult. However, we understand that metal alloying technologies, such as Tantaline, exist, which may be able to provide reliable corrosion protection in much thinner layers, on the order of 0.05mm (0.002 inch). Also, some AG partners have expressed concern about the difficulty of enforcing a more general minimum surface thickness criterion, applicable to all controlled materials. Therefore, this recommendation for a minimum surface thickness for control is limited to fluoropolymers only, which is our primary concern.

A different, but related problem is when an over coating of abrasion-resistant material is placed on top of a controlled material. This can lead to similar classification difficulties. Therefore, we recommend adopting a surface

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coating thickness threshold of greater than 2.5 mm (0.10 inch) for all non-controlled materials place on top of controlled materials. Surface coatings of non-controlled materials with thicknesses of 2.5 mm (0.10 inch) or less present on top of controlled materials should not be considered when classifying chemical manufacturing equipment.

Recommendation

The United States recommends the Control List for Dual-Use Chemical Manufacturing Facilities and Equipment and Related Technology and Software include the following technical note:

Technical note: surface coatings made from fluoropolymers with a minimum surface thickness of 2.5mm (0.1 inch) or less shall be disregarded when classifying dual-use chemical equipment. In addition, surface coatings of non-controlled abrasion-resistant materials on top of controlled materials shall be disregarded when classifying dual-use chemical equipment when the non-controlled material has a surface thickness of 2.5 mm (0.10 inch) or less.

End non-paper.

17. (U) Please begin all responses with AUSTRALIA GROUP and slug for ISN.

18. (U) Department thanks posts for their support.
CLINTON